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ABSTRACT

A preliminary inventory of functions performed by educational linking agents was constructed from a review and analysis of conceptual and descriptive literature and from examination of instruments available to assess required knowledge, skills, and attitudes of linking agents. The functions are derived from clusters of work-related activities, behaviors, or tasks that can be observed with reasonable frequency in job performance. Seven such clusters were identified as core functions based on the frequency with which the activities were cited and the consistency with which a given function was used to organize related activities: planning, resource utilization, communication, problem-solving, process helping, implementation, and evaluation. Also included are six other functions that could not be completely subsumed under the core functions: project management, content-subject matter skills, survival skills, influence/power skills, research, and organizational development. Each function is briefly described and examples of related tasks and skills are given. Several factors that have been identified or suggested as influencing linking agent functions are discussed: roles and functions of others engaged in educational improvement, context in which improvement efforts occur, location of the linking agent, stage of the dissemination/improvement process, and differentiation among domains related to functions. (Author/IRT)

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A PRELIMINARY INVENTORY OF EDUCATIONAL LINKING AGENT FUNCTIONS WITH BRIEF EXPLANATIONS

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PREFACE

The National Institute of Education is committed to building knowledge of the processes and structures involved in improving educational practice. In line with these objectives, the Institute initiated a collaborative effort involving nine federally-supported educational laboratories and research and development centers that had maintained R&D activities concerned with providing change support to the staffs of schools attempting to improve educational practice. R&D centers include those at the University of California at Los Angeles, the University of Oregon, Stanford University, the University of Texas, and the University of Wisconsin. Also cooperating were the Far West Laboratory for Educational Research and Development, the Northwest Regional Educational Laboratory, Research for Better Schools, and the Southwest Regional Educational Laboratory.

This list of functions and explanations is a small part of this larger cooperative effort to organize knowledge and resources to support educational change agents. The result is both more and less than the product originally intented. The list is considerably less than an exhaustive or definitive list of functions. However, the report itself is more than simply a list of functions and explanations; also included are observations about how functions are and are not considered in the sources examined, as well as a brief inventory of factors or dimensions which may influence the performance of linking agent functions. Therefore, the report serves as a starting point for more systematic examinations of linking agent functions rather than as a summation of an existing state of knowledge.

ABSTRACT

A preliminary inventory of functions performed by educational linking agents was constructed from a review and analysis of conceptual and descriptive literature and examination of instruments available to assess required knowledge, skills, and attitudes of linking agents. The functions are derived from aggregations or clusters of work-related activities, behaviors, or tasks which can be observed with reasonable frequency in job performance. Seven such clusters were identified as core functions based on the frequency with which the activities were cited and the consistency with which a given function was used to organize related activities: planning, resource utilization, communication, problem solving, process helping, implementation, and evaluation. Also included are six other functions which could not be completely subsumed under the core functions: project management, content/subject matter skills, survival skills, influence/power skills, research, and organizational development. Each function is briefly described and examples of related tasks and skills are given.

The report also presents a brief discussion about the different levels of specificity with which functions are discussed in the literature and summarizes several factors which have been identified or suggested as influencing linking agent functions: roles and functions of others engaged in educational improvement; context in which improvement efforts occur; location of the linking agent (external versus internal); stage of the dissemination/improvement process; and differentiation among domains related to functions.

INTRODUCTION

The objective of this task was to develop a list of linking agent functions and brief explanations based on examinations of previous NIE-commissioned concept papers and other related sources. The intended purpose of such a list was to provide a comprehensive and common basis for description, analysis, planning, or evaluation of educational linking agent activities, training, and other support efforts in terms of the functions performed by linking agents. The list presented here was constructed concurrently with three related activities in FWL's work in the Cooperative Dissemination and Linking Training project; 1) an examination of instruments available to assess required knowledge, skills, and attitudes of linking agents; 2) the development of related compendia of linking agent support resources; and 3) an examination of alternative conceptualizations of linking agent roles and functions. Since the preparation of this list of functions was associated with these three tasks, the literature reviewed for each provided the general background for the functions and explanations. However, the primary sources were the concept papers presented in Linking Processes in Educational Improvement (Nash and Culbertson, 1977), another concept paper by Butler and Paisley (1978) and content analysis of instruments identified for the preparation of Assessment Instruments for Educational Linking Agent Training: A Preliminary Compendium (Pool and Hood, 1978).

As background for the list and explanations of the linking agent functions, it is important to point out how the term "functions" is considered in the literature and the way in which we have used the term to guide the construction of the list. In spite of the fact that it is almost impossible to find a discussion of linking agents in which functions are not at least

mentioned, there is neither a clear definition nor a common usage of the term. Although the literal definition of "function" as "the kind of action or activity proper to a person, thing, or institution" gives a general sense of the meaning, four usages can be distinguished by the degree of specificity associated with the proper kind of action each describes.

At the broadest usage, functions are described in general terms akin to statements of purpose or definition of linking agents. An example of this use is Nash and Culbertson's (1977, p.2) description of a key function of linking agents:

> ...to help those engaged in improvement activities acquire and use relevant ideas, products, and related resources. In one sense the linker function is to help bring greater rationality to change-oriented decisions in school systems by increasing the nature and extent of information utilized in decision making.

Similar to this description is Crandall's (1977, p. 216) definition: "A linking agent is an individual who helps others engage in problem-solving by connecting them to appropriate resources." Both indicate a very general notion of proper linking agent action. Culbertson (1977, pp. 296-300) elaborated on the proper, but still rather general kind of linking agent action by identifying three general functions which are also criteria for distinguishing linking agents from non-linking agents: improving the ends and/or means of education; spanning organizational boundaries; and acquiring and using ideas, expert service, research findings, descriptions of practice, and other knowledge-based products and services in improvement activities.

At the next level of specificity, function is used to indicate the major emphases of activities associated with the various roles that linking agents may assume as they serve as an intermediary between clients engaged in

improvement activities and improvement-related resources. For example, Crandall (1977) identified ten roles, each of which may be performed by a single linking agent, and a primary function or set of functions for each role:

FRONT-END ROLES	FUNCTIONS
Product peddler	Promote sale or adoption of particular product
Information linker	Clarify information needs; search for and provide data and information
Program facilitator	Provide client with variety of curricular and instructional approaches
Process enabler	Assist client with client problem identification and development of appropriate action
Provocateur/doer	Devise and initiate alternative futures for education

BACK-END ROLES	FUNCTIONS
Resource arranger	Assure availability of and access to resources
Information linker	Clarify information and resource needs
Technical assister	Get kinks out of a particular program; assist with general problem-solving
Action researcher/ feedbacker	Help schools learn how current experience can be applied to future problems
Educateur/capacity builder	Help establish capacity to cope with future problems

Although these and similar general descriptions of functions (e.g., Havelock, 1971; Piele, 1975) help to distinguish among the variety of ways linking

agents help clients, in general, the descriptions are presented in broad conceptual terms and do not focus on the day-to-day experience of linking agents.

At the third level of specificity, functions are considered in relation to work-related activities, behaviors, or tasks (e.g., prioritizing activities, listening attentively) which can be observed with reasonable frequency in job performance. Here, functions are aggregations or clusters (e.g., planning, communication, evaluation, etc.) of related activities, behaviors, and tasks.

At the fourth level of specificity we encounter particular activities (e.g., observing and analyzing group interaction; identifying nonverbal cues in oral communication; planning and managing a workshop; comparing/contrasting costs of alternative dissemination strategies). These activities may, in turn, be reduced to even more specific "instructional objective" or "behavior objective" statements that could easily number into the thousands. Even at the fourth level we have found several hundred linking agent activity statements and could easily generate several hundred additional statements.

The present list is based on aggregations or clusters (third level) of more specific activities, for two reasons. First, most attention appears to have been directed to the broader conceptual levels of discussion to the neglect of real world, work-related aspects of the linking agents' performance. Descriptions at the third level (clusters of activities) and fourth level (specific activities) are the levels which begin to specify the details of linking agent work. While the fourth level provides richer detail, the sheer number of activities that must be considered at this level (several hundred) makes it cumbersome to compare and contrast the various sources. For this purpose, clusters or aggregations of comparable activities provide a better

level for comparative analysis. Hence, in the following sections of this report, linking agent functions will be reexamined in terms of clusters or groups of similar activities.

The list presented here was constructed in three steps. First, we identified specific functions or clusters of skills, activities, and behaviors from both the conceptual and descriptive literature and from assessment instruments and inventories of skills. Next, we noted the frequency with which functions were cited and the consistency with which a given function was used to organize related activities. Where different labels were given to similar functions or clusters of activities, we selected the cluster label which most nearly subsumed the elements in the different clusters. From this process, seven core functions were identified: planning, resource utilization, communication, problem solving, process helping, implementation, and evaluation. Across the literature, the terms "planning," "communication," "implementation," and "evaluation" tended to be used consistently as organizing labels for nearly identical clusters of skills, activities, or tasks. However, a variety of different terms were used for related sets of skills which we have organized here under three general rubrics, namely: problem solving, process helping, and resource utilization. Some examples are:

PROBLEM SOLVING

- Identifying problem
- Analyzing problem

PROCESS HELPING

- Group facilitating
- Influencing
- Intervening
- Managing conflict

RESOURCE UTILIZATION

- Monitoring ideas and products
- Collecting and organizing information
- Analyzing data
- Acquiring resources
- Producing
- Marketing
- Disseminating

Examples of the functions as they were listed in the literature are given in Appendix A.

In addition to these seven core functions, we have described six other functions which could not be completely subsumed under the core functions: project management, content/subject matter skills, survival skills, influence/power skills, research, and organizational development. Finally, there are several clusters of skills (e.g., design, diagnosis, entry/intervention) that could be included in more than one of the thirteen categories of functions. We have attempted to discuss these special clusters in each function category to which they are related. Figure 1 summarizes the content area of the sources examined (see the following page).

Figure 1

CONTENT AREAS OF SOURCES EXAMINED

SOURCE \ FUNCTION	CORE FUNCTIONS									OTHER FUNCTIONS			
	PLANNING	RESOURCE UTILIZATION*	COMMUNICATION	PROBLEM SOLVING**	PROCESS HELPING***	IMPLEMENTATION	EVALUATION	PROJECT MANAGEMENT	CONTENT/SUBJECT MATTER	SURVIVAL	INFLUENCE/POWER	RESEARCH	ORGANIZATIONAL DEVELOPMENT
INSTRUMENTS													
1. Baker, S.B. (1971)			X										
2. Creighton, J.W. (1972)		X	X										
3. Davis, J.R. (1971)	X	X	X	X			X						
4. Hood, P. and Blackwell, L. (1975)	X	X	X	X		X	X						
5. Jain, N. (1976)		X	X										
6. American Society for Training and Development (1977)	X	X	X	X	X	X	X						X
7. Cole, B. (1977)	X		X		X		X			X			
8. Gasaway, C. and Erwin, C. (1977)	X	X	X	X	X	X	X			X			
9. The NETWORK (1977)	X	X	X	X		X	X						
10. The NETWORK (1977)	X	X	X	X									
11. Research for Better Schools, Inc. (1977)	X	X	X	X	X	X	X			X	X		X
12. Rosenau, F. (1977)	X	X	X	X	X	X	X						
13. Capla Associates (1977)	X	X	X	X	X	X	X	X					
CONCEPTUAL PAPERS													
14. Derr, C. and Demb, A. (1974)				X						X			X
15. Crandall, D.P. (1977)	X	X	X	X	X	X	X		X	X		X	
16. Lipham, J.M. (1977)	X					X	X						
17. Lieberman, A. (1977)				X									
18. Culbertson, J.A. (1977)	X	X	X	X	X	X	X			X			
19. Butler, M. and Paisley, W. (1978)	X	X	X	X		X	X	X					

* RESOURCE UTILIZATION includes monitoring ideas and products, collecting and organizing information, acquiring resources, analyzing information, disseminating, etc.

** PROBLEM SOLVING includes identifying and analyzing problems, selecting solutions, etc.

*** PROCESS HELPING includes group facilitating, influencing, intervening, etc.

FUNCTIONS AND EXPLANATIONS

Three points are important to make about the way in which the functions and explanations are presented:

1. Although the explanations treat each function as a relatively separate activity, we recognize and emphasize that the functions often overlap and that skills necessary to perform one function also are often required to perform another. For example, communication is a necessary aspect of all the other functions. Similarly, planning is necessary both as a separate function and as part of resource utilization, problem solving, implementation, etc.

2. We have discovered no basis on which to estimate the relative importance of these functions to external and internal linkers or differences in functions related to linker location. Therefore, we do not differentiate between the two.

3. Neither did we find any empirical evidence on which to estimate the relative importance of the functions for program improvement. Assessments of relative primacy of functions or related skills are either conceptual, experiential estimates (e.g., Crandall, 1977), or based on data applicable to a single program or project (e.g., NDN-TAB, Capla, 1977), or gathered from such a limited number of sources (e.g., Rosenau, 1977) that they cannot be generalized with any sense of accuracy.

Core Functions

Planning. Planning is a continuous, systematic effort to establish goals, procedures, and methods for any of the full range of tasks related to implementing improvement-oriented actions. The process is applicable prior to establishing or responding to client contacts as well as before, during, and after decisions and actions related to implementation of particular improvement efforts. Crandall (1977, pp. 247-248) describes planning as the "getting ready work" or "organizing for work" which includes "delineation of action steps, resources required, anticipation of probable pitfalls, resources allocation requirements, and systematic charting."

One part of planning involves diagnosis or analysis of the cause or nature of a condition, situation, or problem in order to determine appropriate

interventions or resources. Design adds to planning the notion of special intentional adaptation to a specific end and, as described by Gasaway and Erwin (1977, p. 7), is "putting together necessary components and sequencing them in a logical flow to meet client's needs for a particular service (or resource)." It is important to note that the "logical flow" conceived in planning and design may be interrupted, not only by probable pitfalls, but also by unanticipated pitfalls. An essential feature of planning and any resulting plan or method must have flexibility to accommodate such interruptions so that appropriate shifts in direction and emphasis can be made.

Some examples of related tasks and skills are:

- Adapting strategy to a particular audience
- Managing delivery of resources/services
- Knowing when to say "no"
- Budgeting and accounting
- Prioritizing activities

Resource Utilization. There are three important aspects of this function: familiarity with available resources; an understanding of the appropriate use of resources; and knowing when to refer clients to someone besides oneself. Utilizing resources (which include information, personnel, materials, time, money, and ideas) involves several sub-functions. Linkers must find and acquire resources by continuously monitoring ideas, products, and information and analyzing what they monitor to identify resources most useful to their clients. They also collect and organize information about resources and in some cases, such as materials and products, may also collect and organize the resources themselves. In many instances they may be called upon to "produce" resources themselves or in cooperation with clients in the form of ideas or technical assistance such as workshops, staff development and training, etc. One important sub-function has been labeled variously as disseminating,

marketing, and public relations. Whatever the label, it involves achieving visibility for the available resources (including the linker him/herself) and includes devising strategies for publicizing information, activities, and results and effectively packaging information and materials. Design—putting together necessary components in an appropriate sequence to meet a client's needs of a particular resource or set of resources—may also be one of the sub-functions.

Understanding the appropriate use of resources involves both a "technical" aspect and a "sensing" aspect. For example, the technical aspect involves knowing how particular materials, products, and processes should be employed. The sensing aspect involves knowing when and under what circumstances particular resources are appropriate and by whom they should be provided. For example, a staff development workshop may be the resource called for and personnel to conduct the workshop may be available within the client organization, through an external organization, or through the linker. The linker must be able to sense, explicitly or implicitly, which personnel would be most appropriate in terms of the political context, interpersonal relationships, etc., as well as in terms of effective technical skills.

Some examples of related tasks and skills are:

- Clarifying vague requests
- Dealing with information overload, system noise
- Knowledge transformation skills
- Using adaptation/modification skills and understandings
- Using internal resources
- Using external agency resources

Communication. In short, the communication function involves understanding and being understood by the variety of individuals, groups, and organizations with whom the linker interacts. It is a generic process and, like planning,

a continuous process. Formal and informal oral, written, and nonverbal communications are included in one-way, two-way, and multi-way interactions between the linking agent and all those whom the linker contacts: client(s), client systems, teachers, administrators, resource personnel, resource systems, etc. It includes identifying and analyzing differences among audiences or contacts, and devising appropriate strategies for communicating with each. Also included are the diagnosis and resolution of communications breakdowns.

Some examples of related tasks and skills are:

- Listening attentively
- Asking questions for clarity and understanding
- Identifying nonverbal cues
- Synthesizing and summarizing (oral and written)
- Demonstrating materials

Problem Solving. The linking agent's problem-solving function is to assist the client to cope with or eliminate a situation identified as a problem. The function involves all phases of dealing with a problem: identifying, analyzing, and understanding the problem; identifying, selecting, and implementing a problem-solving strategy; and evaluating the results. Northwest Laboratory has distinguished among three types of problem-solving around which Crandall (1977, pp. 244-266) suggests that linkers can classify appropriate technology and approaches:

> Technical problem-solving: ...both the current state of affairs and the desired end point are known and are able to be specified...a system analysis or operations research mode is an appropriate approach.
>
> Theoretical problem-solving: ...the current state of affairs can be limited, but the desired end state cannot be specified ...calls for an action research approach which will develop a series of iterations leading to an agreeable end point...
>
> Philosophical problem-solving: ...there is clarity as to the current state of affairs as well as desired multiple end states, but fundamental disagreement as to the desirability

> of one or more of the possible end states...the problem-solving approach is conflict resolution and negotiation procedures.

These three types of problem solving and applicable approaches serve to emphasize an important point. Although most descriptions of problem solving are based on a rational or linear approach which implies the selection or application of a solution based on objective, pre-established criteria, not all problems are amenable to such an approach. Where fundamental philosophical, political, or interpersonal disagreement exists, the "best" solution may be the one toward which all parties can work in relative harmony rather than one which is "best" in terms of cost/output ratio, improvement of test scores, etc.

Some examples of related tasks and skills are:

- Generating solutions and determining implications
- Using force field analysis
- Identifying key people for decision points
- Identifying professionals who can assist in the use of group problem-solving techniques

Process Helping. The linking agent acts as a facilitator for interaction within the client group, and the primary focus is on the process rather than on the content of the interaction. More specifically, the focus is on the dynamics of behavior which operate in the areas of leadership, decisionmaking, interpersonal relationships, task directedness, etc. Although an immediate objective may be to facilitate the consideration of a particular issue, topic, or problem, the long-range objective is to increase the group's awareness of what they are doing and to increase their sense of control over their interactions. Thus, although the linker must be able to engage effectively in activities such as identifying issues (task versus relationship), leadership styles, decisionmaking modes, and dealing with conflict, hidden agendas, and group pressure, conformity, and influence, the major emphasis is on increasing

the group's ability to engage in these activities without the linking agent's assistance.

Some examples of related tasks and skills are:

- Observational sensitivity
- Induce reflectivity in group members
- Communicating feelings appropriately
- Developing and displaying empathy for different positions

Implementation. In the implementation function, the linking agent assists the client to plan for and carry out the improvement effort from the adoption decision to and through institutionalization of the improvement of innovation. Crandall describes this as partially a coordination function which calls for division of labor, clarification of roles, providing support for the action efforts, and soliciting feedback from participants in order to restate goals and adjust to changes in original goals or plans. Also involved are attention to the logistics of providing needed and agreed-upon resources, resource allocation and adjustment, and dealing with problems or issues not evident prior to the implementation effort. Especially important in this function is helping the client to gain and/or maintain support for continuing the particular innovation or improvement once the actual implementation process has been completed.

Some examples of related tasks and skills are:

- Troubleshooting problems that may develop at school sites during planning or implementation stages
- Understanding stages or hierarchy of concerns of clients during implementation
- Helping clients locate federal/state/foundation/other supplementary sources to install new programs
- Adapting workshops to specific needs or selected practitioners according to previous experience with innovation and/or stage of concern

Evaluation. The linking agent is involved in assessing and/or assisting the client to assess the effectiveness of the change process and/or the impact of the change effort. This includes documenting the evaluation from the design to the report of the results. It also includes the linking agent's assessment of his/her own effectiveness in carrying out tasks and functions. Often, the most important part of this function is to persuade the client of the utility of evaluation as a means to improve the change process in which the client is currently engaged, as well as a means to improve future change efforts by identifying and eliminating obstacles to successful change. The linking agent need not have or acquire the expertise of a professional evaluator, but should have a reasonable degree of familiarity with both formative and summative evaluation concepts and techniques as well as technical assistance resources. Another critical aspect of the evaluation function is the clear interpretation of evaluation results and the incorporation of recommended adjustments into subsequent change efforts or stages in the present change process. This is equally important to the client and to the linking agent's own efforts.

Some examples of related tasks and skills are:

- Preparing an adoption case history
- Using and supporting collection of longitudinal data
- Recognizing virtues/limitations of current evaluation/ validation procedures
- Standardizing recording procedures

Other Functions

Project Management. Although in their broadest sense the seven core functions can be considered management functions, they are usually described primarily as they apply to managing relationships and activities between the linking agent and the client. However, the management of the project,

program, or agency which houses the agent requires attention separate from or in addition to agent-client dissemination relationships and activities. This function, directly addressed by Mick et al. (1975), Capla Associates (1977), and Butler and Paisley (1978), is likely to become increasingly important as linking agentry matures and expands as a field.

Some examples of related tasks and skills are:

- Knowledge of federal and state statutes and/or guidelines related to programs
- Techniques for cash flow (collection and payment procedures)
- Budgeting methods
- Project accounting and state and federal audit procedures

Content/Subject Matter. Crandall (1977, pp. 251-252) pointed out that at appropriate points it is important to view process as content (e.g., the process of planned change in education, the process of curriculum development and instructional practice and technology). These processes are, in effect, the content or subject matter for most linking agents. However, in some situations linking agents may also need to be familiar with the main substantive issues in a field when there is a long-term client-agent relationship and/or when a particular content area (e.g., reading, special education) is an essential focus of the client-agent problem-solving relationship.

Survival. Survival skills or activities directly address the personal aspects of the linking agentry, what Crandall called (1977, pp. 253-258) the "ever present need to stay alive in a professional situation". Although others have indirectly recognized the need for survival skills by including items such as "knowing when to say no" in other functional areas, Crandall is the only source that directly treated the personal issue. He pointed out that the long-term notion of survival skills takes on "a professional

development focus on ongoing training and education and of expanding the group of colleagues to whom one can turn for counsel and solace about various matters in one's work and life. Survival also requires maintaining appropriate communication with different levels of the client system, the resource system, and one's own host agency as to one's own progress and plans."

The newness of the linking agent as a professional area and the marginality of the role account for the lack of attention to personal concerns of linkers. However, as with project management, increasing maturity and expansion of the field will require increasing attention to these concerns.

Influence/Power. Most instruments and discussions imply the use of influence and power activities or skills under the problem-solving or communication functions with items such as "identifying key people for decision points" and "identifying nonverbal behaviors/communications." Only two sources (Gasaway and Erwin, 1977; Cole, 1977) treat influence and/or power as separate skill or activity areas. Gasaway and Erwin define influence as "the ability of one person to affect the attitude, behaviors, or ideas of others" and power as "the ability of one person to control the behavior of another person by reason of position or authority" (p. 9). Both sources direct attention to the linking agent as well as to the client with items such as:

- Identifying own characteristic style of influencing
- Defining my need to influence
- Understanding and helping the client(s) to understand power bases
- Coping with and helping the client(s) with feelings of power and powerlessness

Although helping the client to understand and cope with power and influence needs or situations might be confined primarily to communication and problem

solving functions, the linking agent's own needs/styles require attention across all the primary functions.

Research. As with content/subject matter, seldom will (or should) linking agents be called upon to perform research in the strict definition of the term. However, linking agents should have some familiarity with research processes and approaches in order to assess the quality of information they provide to clients and also to understand research methods and tools employed in research on dissemination and utilization itself.

Organizational Development. Organizational development (OD) is rarely addressed separately in discussions of linker skills, activities, or functions, but it is often implied by items such as "using force field analysis" and "diagnosing innovation-organizational fit" which are included under the larger problem-solving category. OD can subsume all or most of the process helping and problem-solving core functions. However, OD is more than a technique or skill; it is both an intervention theory with proscriptions about the counsulting relationship in the process of planned change and "a normative theory which describes effective organization and thus sets goals for the change process" (Derr and Demb, 1974, p. 9). As a guiding theory of planned change, OD serves more as a particular perspective that guides the selection and use of core functions than as an additional cluster of functions.

Conclusions

Hood and Cates (1978, pp. 51-72) noted that there is no fundamental contradiction among the various conceptions of linking agent roles and functions. That observation holds true for the functions identified and described here. Differences of opinion tend to be reflected by different labels (e.g., process helping versus group facilitating) or by the range

of skills organized within a cluster (e.g., problem solving may be considered as a single cluster which subsumes problem identification, analysis, and solution, or problem identification, problem analysis, and problem solution may be considered as three clusters). Although the particular sets of skills could be organized into larger or smaller numbers of clusters, the core functions listed above are represented in the literature with relatively minor differences of opinion about their basic relevance. the Appendix contains examples of lists of more specific functions which also reflect general similarity. Thus, the present list appears adequate to describe linking agent functions when they are considered as aggregations of related activities, behaviors, and tasks.

However, Hood and Cates also pointed out that most of the knowledge from which the general agreement is drawn is based on idealized conceptual frameworks and derivations that are tenuously grounded in observational data. Pool and Hood (1978) reported that existing observational data are sparse, and their utility limited by inadequate documentation. Thus, there is the risk that this list or others based on idealized and abstract conceptualizations or limited observational data may be inadequate to describe the full range of actual linking agentry work. Moreover, as we move from more general to more specific understandings of linking agent work, more specific and comprehensive lists will be required. It is also likely that there will be a need for greater differentiation among functions to reflect the variety of actual linking agent experiences and requirements. At present, we are not able to identify the full range of dimensions along which functions may be differentiated. However, in the literature reviewed for this task several factors were identified. These are reviewed briefly in the following section.

SUMMARY OF FACTORS WHICH MAY INFLUENCE DESCRIPTIONS OF LINKING AGENT FUNCTIONS

As background for considering the influencing factors it is important to emphasize that a critical analysis of either the factors or the sources was considered to be well beyond the scope of this task. Rather, the intention here is simply to enumerate such factors and to summarize briefly some of the sources which have considered or suggested the factors.

In the sources reviewed consideration of the factors varies greatly in the degree of detail included and the clarity of examples given to illustrate differences in functions as a result of the influencing factors. In some instances little more than a very general notion of the factor and its influences can be described. Still, a summary of the factors and sources appears to have potential in suggesting dimensions along which functions can be examined more carefully in the future. Twelve factors have been identified, and each can be thought of as one part of a single question: How will functions performed by linking agents be influenced by:

- the linking agent's position within a project or program;
- the modal or generic role performed by the linking agent;
- the stage of the dissemination process in which the linking agent and client are engaged;
- the location of the linking agent in relation to the client system (external versus internal);
- the time (full-time versus part-time) the linking agent can devote to the job;
- the experience of the linking agent;
- the maturity of the dissemination project;
- the maturity of the client;
- the maturity of the resource/support system;
- the context in which the linking process occurs;

- the roles and functions of others engaged in educational improvement;
- the differentiation among content domains (e.g., technical skills, cognitive skills, personal attributes).

Position Within a Project or Program. Differences in particular functions emphasized and the way in which functions are performed can be traced to differences in how a single linking project or program is organized. In contrast to the idealized "superlinker" who can or must perform all functions with equal emphasis, Sieber (1972), Mick et al. (1973), and Butler and Paisley (1978) identified several different positions within a single resource-oriented program and differentiated among the functions emphasized in each position (Figure 2). In this configuration of positions, different emphases on functions can be observed in the differences between the field agent's responsibilities and the responsibilities of the print and human resource specialist. For example, the function of resource utilization is performed by the field agent and two types of resource specialists. The specialists are responsible for identifying, developing, and maintaining their respective resource files, while delivery of resources to clients rests with the field agent.

Butler and Paisley (pp. 39-43) reminded us that differentiation among positions does not have to begin at zero. At least two complementary positions exist in several federally-sponsored programs such as the State Capacity Building and R&D Utilization Programs and the National Diffusion Network (NDN). Capla Associates (1977) has begun efforts to discriminate among functions and tasks performed by State Facilitators and Developer/Demonstrators in the NDN.

Modal or Generic Roles Performed by Linking Agents. Another way to differentiate among functions is to relate individual functions or patterns of

FIGURE 2

POSITIONS AND ASSOCIATED FUNCTIONS WITHIN A SINGLE PROJECT

PROJECT DIRECTOR

- Project representation and institutionalization (6 tasks)
- Project administration (2 tasks)

PROJECT MANAGER

- General management (3 tasks)
- Project representation (2 tasks)
- Daily project supervision (3 tasks)

PRINT RESOURCES SPECIALISTS

- Establishment and maintenance of collection (2 tasks)
- Performance of search-related activities (5 tasks)

HUMAN RESOURCES SPECIALIST

- Development and maintenance of human resources file (3 tasks)
- Liaison between consultants and schools (4 tasks)
- Liaison between schools and exemplary sites (3 tasks)
- Communication and feedback (2 tasks)

EDITOR/PUBLICATIONS SPECIALIST*

MEDIA SPECIALIST*

FIELD AGENT

- Linkage role (5 tasks)
- Management of field-based operations (2 tasks)
- Coordination of part-time agents (2 tasks)

*Task analysis was not undertaken for these positions.

SOURCE: Butler and Paisley (1978, p. 42).

functions to the generic roles performed by linking agents. Piele (1975) and Butler and Paisley (1978) distinguished among such roles--resource finder, process helper, and solution giver--each characterized by the linker's primary mode or style of interactions with the client. The three roles are not described as functionally discrete or mutually exclusive categories. Indeed, the permeability of the boundaries among the roles and functions are accounted for by two possible additional roles--a generalist "scout" linking agent who moves among the modal roles to perform a variety of functions as they are required and a "superlinker" who, at least in theory, could play all the roles and could perform all the functions. Figure 3 depicts the modal roles and examples of functional patterns related to each role.

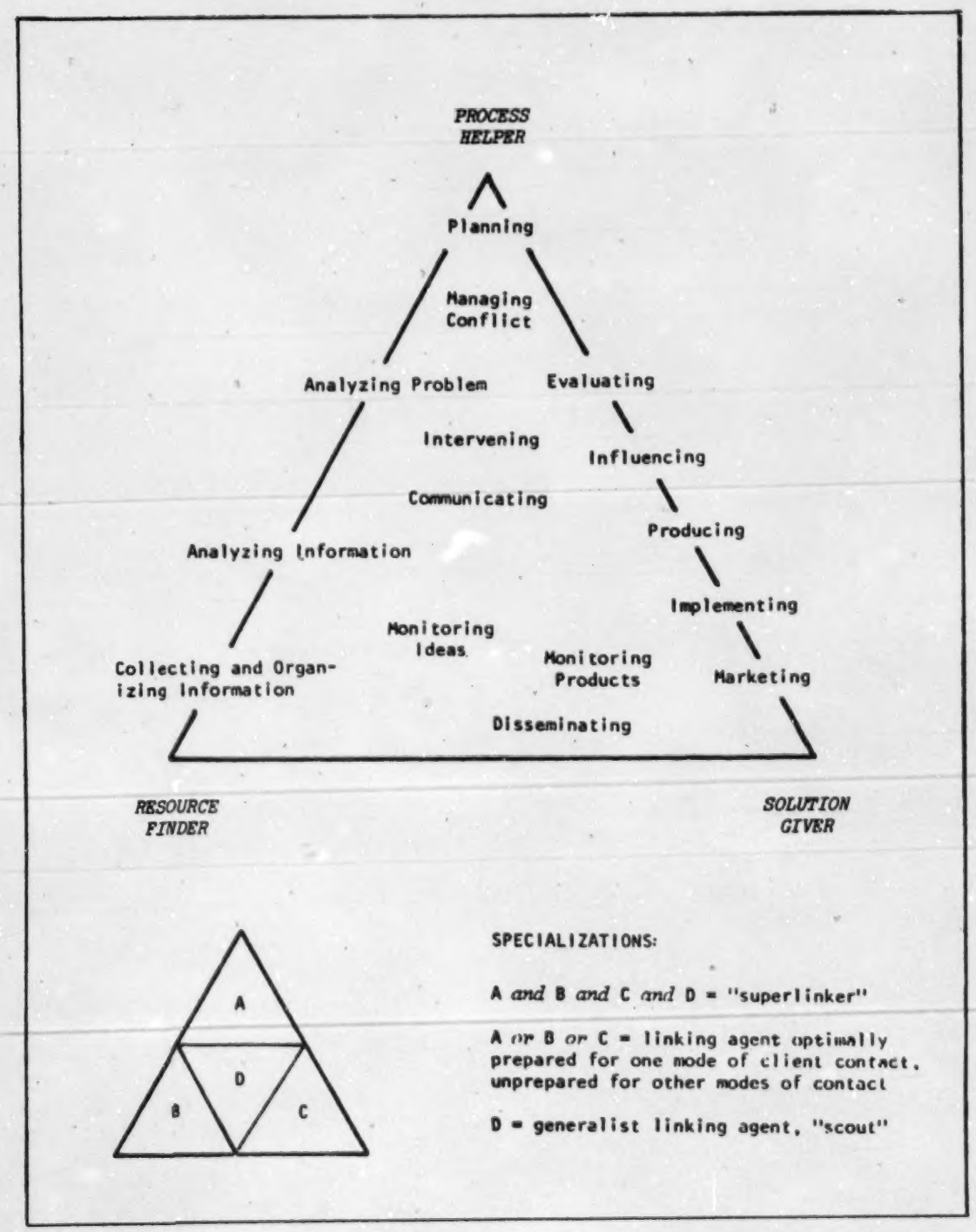
Stages of the Dissemination Process. Crandall (1977, pp. 218-229) suggested ten more concrete linking agent roles which he separated into two sets. Five roles which are performed prior to the adoption or change decision (front-end roles) are reflected by five roles performed after the adoption or change decision (back-end roles). Although roles in the two sets can be paired according to similar styles of linking agent behavior, distinctions can be made between the paired roles according to differences in the nature of the linker-client relationship. In the following list, the examples suggest the role differentiations between complementary front-end roles (F) and back-end roles (B):

(F) Product Peddler, e.g., commercial book salesperson.

(B) Resource Arranger, e.g., provides a variety of sources, makes arrangements needed during implementation.

FIGURE 3

THREE MODAL LINKING ROLES AND THEIR RELATIONSHIP WITH SELECTED LINKING FUNCTIONS



(F) Information Linker, e.g., information specialist or reference librarian; emphasis on providing information to meet user requests.

(B) Information Linker, e.g., similar to front-end role, but user requests may be broadened to questions such as "How do I keep the community informed of my progress?"

(F) Program Facilitator, e.g., NDN State Facilitator, presents client with variety of curricula and instructional approaches.

(B) Technical Assister, e.g., content or process specialist or general problem-solving consultant.

(F) Process Enabler, e.g., OD consultant, communications specialist, process consultant, group facilitator.

(B) Action Researcher/Data Feedbacker, e.g., similar to process enabler but with additional emphasis on generalizing from present to future situations.

(F) Provocateur/Doer, e.g., one who has a vision of alternative futures and provides concrete, workable ideas and leadership.

(B) Educateur/Capacity Builder, e.g., roving systems improvement specialist; assists clients in establishing a capability to cope with future problems.

In addition to distinguishing front-end and back-end roles according to the difference in the character of the linker's relationship with the client, Crandall (pp. 239-255) also describes nine clusters of technical skills (functions) and estimates the relative importance of each cluster for effective performance of the ten roles. In Figure 4 Crandall's display of roles and functions is modified to allow comparison of the functions related to each pair of roles.

In general, only communication and survival skills are essential for effective performance of all the roles, and the closer a role is to the decision point, the greater the range of functions required. However, the relative primacy of functions is not identical for each pair of roles. Both the character

FIGURE 4

RELATIVE PRIMACY OF TECHNICAL SKILL CLUSTERS FOR VARIOUS LINKING AGENT ROLES

LINKING AGENT ROLES	TECHNICAL SKILL CLUSTERS								
	Problem Solving	Communication	Resource Utilization	Planning	Process Helping	Implementation	Content/ Subject Matter	Evaluation/ Documentation	Survival
(F) Product Peddler		+++							+
(B) Resource Arranger		+							+
(F) Information Linker	+	++	+++				++		++
(B) Information Linker	+	++	+++				++		++
(F) Program Facilitator	+	+++	+	+		+	+	+	++
(B) Technical Assister	++	++	++	++	++	++	++	+	++
(F) Process Enabler	+++	+++	++	+++	+++	++	+	+	+++
(B) Action Researcher/ Data Feedbacker	+++	+++	++	++	+++	+++	+	+++	+++
(F) Provocateur	++	+++	+	++	++	+	+	+	++
(B) Educateur/Capacity Builder	+++	+++	++	+++	++	+++	+	++	+++

Decision Point

KEY: (blank) skill not essential for effective role performance
+ tertiary skill for effective role performance
++ secondary skill for effective role performance
+++ primary skill for effective role performance

(F) = Front-end roles

(B) = Back-end roles

SOURCE: Modified from Crandall, 1977, p. 256.

of the roles and the character and importance of the functions shift with respect to the phase of the adoption/change effort. Since a larger number of phases can be identified than front-end/back-end--e.g., interest, awareness, evaluation, trial, implementation (Rogers, 1962) or the six CBAM levels of use (Hall et al., 1975)--it seems reasonable to believe that finer distinctions among both roles and functions can be associated with particular client phases. Finer phase-contingent role and function distinctions may be essential for task analysis or for delineation of personnel and training requirements.

Location of the Linking Agent. Butler and Paisley (1978, pp. 27-30) focused on the location of the linking agent, external or internal to the client organization, as one of the dimensions that strongly differentiates the roles and functions of linking agents, and briefly described the contrasting set of positive and negative role aspects which external and internal linkers bring to the client contact. For example, external linkers may lack detailed knowledge about the client organization, but can compensate for the lack of knowledge by an energetic commitment of time and energy and a relatively objective view of the client's problem. On the other hand, it may be more difficult for the external linker to establish contact with the right individual or group in the client organization. In addition, the external linker may have difficulty maintaining enough cognitive flexibility to deal with the problem frameworks (context, resource needs, time demands) of several client organizations at the same time. In contrast, the internal linker is likely to be more knowledgeable about the organization and the key contact people, but may be less objective about the problems involved and less energetic in meeting client needs. The particular similarity between external and internal linkers is the boundary-spanning function, through which each brings needs knowledge

and skills either across organizational boundaries (external) or across unit boundaries within the same organization (internal).

Similarly, Culbertson (1977) identified boundary spanning as the particularly common function of external and internal linkers, but approached the contrasts in terms of different applications of learnings. Included among the different applications were strategies of change, models of change, specificity or variety of improvement objectives, knowledge and understanding about agencies involved in or contributing to the improvement process, etc. Table 1 depicts eight different applications.

TABLE 1

DIFFERENT APPLICATIONS OF LEARNINGS BY INTERNAL AND EXTERNAL LINKERS

Internal Linkers	External Linkers
1. Because internal linkers worked in more politicized environments, they made greater use of "normative re-educative" strategies of change than did external linkers.[1]	1. External linkers whose chief tools were knowledge-based products and services made greater use of the "empirical-rational" approach to change than did internal linkers.
2. Most internal linkers found the problem-solving model of change more meaningful than other models because it enabled them to address constraints and opportunities in their own situations.	2. External linkers valued linkage and social interaction models of change because they, in contrast to internal linkers, worked in varied settings and had opportunities to see the impact of knowledge diffusion processes in different school systems.
3. Internal linkers needed sources of information and search strategies which could help them locate products or services pertinent to specific improvement objectives.	3. External linkers needed to be familiar with a wide array of knowledge-based products and services so that they could respond to information requests related to varied improvement objectives.
4. Internal linkers used boundary-spanning skills to obtain relevant human or knowledge-based resources from organizations external to school systems.	4. External linkers applied boundary-spanning skills to provide information and services to diverse educational organizations engaged in improvement activities.
5. Since internal linkers brought commitment to specific improvement objectives and an intimate understanding of the change variables in local situations, they needed a general knowledge of resources external to the school system.	5. Since external linkers brought to bear a wide range of information, resources and improvement activities, they needed clinical knowledge about key variables affecting educational improvement in specific systems.
6. Internal linkers had special needs for knowlege and skill in goal setting because of their key legitimation roles.	6. External linkers needed knowledge and skill for use in bringing to bear a wide range of means to achieve goals.
7. Internal linkers needed greater knowledge about the types and attributes of agencies which could provide information on knowledge-based products and services.	7. External linkers needed greater knowledge of the types and attributes of agencies within which educational improvement activities take place.
8. Internal linkers needed greater understanding of information about the products emanating from knowledge uses so that they could apply them in improvement activities.	8. External linkers needed a greater understanding of the processes used to create knowedge-based products and systems.

[1]For distinctions between the "normative re-educative" and the "empirical-rational" see Robert Chin and Kenneth Benne, "General Strategies for Affecting Change Within Human Systems," in *The Planning of Change*. New York: Holt, Rinehart, & Winston, 1960, pp. 32-59.

Source: Culbertson, 1977, p. 302

In addition to pointing out some of the broad areas of difference between external and internal linkers, both discussions include projections relevant to training for external and internal locations. Culbertson suggested that although the differing perspective and contexts of internal and external linkers result in some differences in performance of functions, the differences will be less fundamental than expected. Butler and Paisley projected that the estimated 1975 ratio of 90 percent external linkers to 10 percent internal linkers will have reversed to 10 percent external and 90 percent internal by 1995.

If Culbertson's projection is correct, general training programs or those developed for external linkers can probably be modified rather easily to account for changing needs as the ratio shifts. If this projection is incorrect, training programs (and support systems) established without consideration of potential differences will probably have to be almost completely replaced rather than modified. Admittedly, both projections are only rough estimates and neither is supported by research-based information, but the possiblities suggested by the projections should lend impetus for greater exploration of the differences.

Time Commitment. Little direct or specific attention has been given to requirements for or performance of roles and functions which may be due to the full-time or part-time status of a linking agent. However, Butler and Paisley (pp. 39-41) considered this factor indirectly in their discussion of the linking agent's location and implications for training and support systems. The critical distinction they make is that full-time linking agents perform both the role and functions whereas the part-time agents perform the functions only, and integrate the linking functions with their nominal other full-time

roles. They also relate (the present) part-time status to the internal location and the present full-time status to the external location, but indicate that in the future internal linkers also may be full-time. By associating the external location with the full-time status and the internal location with the part-time status, they imply that distinctions among functions in linker locations may be confounded with differences in linker time status.

Experience of Linking Agents. This factor is related to the breadth and depth of the agent's experience in the dissemination/change process and the agent's knowledge of what he/she can do as a result of that experience. Experienced agents are likely to have more cognitive flexibility to deal with a greater number and type of client organizations than beginning agents. In addition, experienced agents may be able to anticipate problems more accurately and readily than new agents. In contrast, new agents may be better able to stimulate client enthusiasm and positive excitement than agents for whom the process is repetitive and "standard operating procedure."

Maturity of the Project. The maturity of a given linking/dissemination project seems likely to influence what and how the project expects the linking agent to perform and also the resources and support the project is able to provide for the agent. Project expectations in the start-up stage may focus on the identifying of clients, creating initial awareness and legitimacy of the project and in general exploring the territory in which the project is to operate. Within the project itself, attention may be focused on establishing policies and procedures, clarifying internal lines of communication and establishing contacts with resource organizations and individuals external to the project. Training and support services for agents may be very general and not yet targeted to particular requirements which emerge as a project matures. On the other hand, a experimental attitude may be more prevalent

in newly established projects than in more mature projects with well established policies, procedures, etc.

Maturity of the Client. The client's maturity in the dissemination/change process may influence what the client expects the linking agent to do. A client who is at the awareness stage of a particular innovation and has had no previous experience with innovation in general may expect the agent to provide detailed interpretations of print resources for their relevance to the client's needs. A client who is at the awareness phase but has had previous experience with innovations may expect or need little or no interpretation to perceive the relevance of the resource. In addition, more mature clients may be better able to specify their resource needs to the agent and more clearly describe or define problem situations.

Maturity of Resource/Support System. The maturity of the larger system which produces or develops resources and support services (as opposed to the project which "plugs into" the larger system) can influence the efficient and effective performance of linking agent functions. Butler and Paisley (pp. 35-39) suggest that mature systems are characterized by "multipliers" for communication, personnel and resources and a wide range of knowledge transformation products. However, they point out that little progress has been made in providing such multipliers for educational linking agents. For example, knowledge transformation products should provide printed materials which vary in content and format to meet the needs of different client groups, but generally, knowledge transformation products are not provided in different versions. Communications multipliers related to audiovisual technology are similarly immature or undeveloped for education linking agents. Butler and Paisley argue that adequate communication multipliers and knowledge

transformation products would increase the time agents could spend performing additional functions and/or the number of clients agents could contact.

Context. Hood and Cates (1978) have pointed out that discussion of linker roles and functions rarely focuses on the specific contexts in which linking roles and functions are performed. They tell us little about characteristics of either the client or the host organization and little about the factors which influence the nature of the linking agent or client performance. However, two recent efforts suggest directions to be explored more fully.

Butler and Paisley (1978, pp. 7-26) remind us that educational dissemination occurs in multiple contexts (historical, political, economic, social, psychological, cultural, etc.) and that these contexts differentiate the settings in which educators work and in which dissemination occurs. In emphasizing the far-reaching effects of contexts upon dissemination, they state that "ultimately it is the context of a program that determines its structure and function, its scope and duration, and its acceptance and utilization by clients...an analysis of the program's relationship to its context helps to predict its effectiveness and to indicate aspects of the program in which the context is not accomodated." They also indicate that a single model of dissemination, although useful as a depiction of archetypical cases, is inadequate for reflecting different relationships among various contexts and dissemination activities.

Roles and Functions of Others. If we are to develop a robust conception of linking agents (as well as the linking process), attention must be given not only to the linking agent role and function but also to the relevant roles and functions of the variety of individuals, groups, and organizations involved in the improvement of education. Crandall (1977) has reminded us that within the constellation of the linking agent's portion of the universe are three

systems or agencies: the client system, the resource system, and the linker's host agency.

However, only the client system has begun to be addressed in a systematic fashion. Lipham (1977) described educational functions and support in terms of the administrator's role and the leadership functions required in that role to support improvement efforts. Culbertson (1977, pp. 293-296) built on that description and others to differentiate among three educational sub-systems (teaching-learning, management-leadership, policymaking) and to suggest the relationship of each to three general linker functions (improve education; span organizational boundaries; acquire and use knowledge-based ideas, products, and services in improvement activities). Table 2 depicts the functions described for each sub-system. Culbertson's description is especially useful as a reminder of the division of purpose and functions within the client system and thus a reminder of the variety of contacts a linking agent may have within that system.

Table 2

SUB-SYSTEM FUNCTIONS RELATED TO EDUCATIONAL IMPROVEMENT

Sub-System	Functions
Teaching-Learning System	1. Diagnosing students' needs and learning difficulties[a] 2. Devising learning objectives and programs to meet needs 3. Asking types of questions which require a different type of thought process 4. Effectively rewarding certain kinds of student behavior 5. Using various kinds of audio-visual and instructional aids 6. Evaluating student performance 7. Effectively using different kinds of knowledge to teach curriculum content 8. Instructing individuals, small groups and large groups
Management-Leadership System	1. Managing curriculum and instruction[b] 2. Managing staff personnel 3. Managing student personnel 4. Managing finance and business functions 5. Managing school facilities 6. Managing school community relations
Policy-Making System	1. Analyzing discrepancies between goals and accomplishments 2. Deducing objectives from discrepancy analysis 3. Assessing which objectives, if attained, would offer the best cost-benefit ratios 4. Determining policy objectives 5. Generating alternatives to achieve chosen objectives 6. Choosing the most effective alternative(s) 7. Developing plans to achieve chosen objective(s)

[a]Adapted from Commission on Public School Personnel Policies in Ohio, *Realities and Revolution in Teacher Education*. Cleveland: Greater Cleveland Associated Foundation, 1972, p. 15.
[b]Adapted from Lipman, J. M.; Hoeh, J. A., Jr., *The Principalship: Foundations and Functions*. New York: Harper & Row, 1974.

Source: Culbertson, 1977, p. 295

Except for Crandall's brief descriptions, virtually no attention has been directed toward the roles and functions of resource system participants. Admittedly, many in the resource system will have, at the most, only fleeting contact with linkers and their clients, but numerous others are precisely the "human resources" which the linker connects with the client (e.g., trainers, evaluators, demonstrators, etc.) and thus are directly involved in the improvement and linking process. Similarly, the linker's host agency itself is a participant in the linking process whether the agency holds linking as its primary purpose or as only one of many purposes and functions (e.g., SEAs, colleges and universities, R&D labs and centers). In either case, we yet know little about linking related functions of non-linking agent personnel within host agencies, although Crandall pointed out that the "reality of their host agency will affect [the linking agents'] functioning and ultimate effectiveness in major ways." Capla Associates (1977) discriminated in general between linking agent functions and project management functions, but only Sieber, Louis and Metzger (1972, pp. 363-408) and Mick, et al. (1975, pp. 68-115) have examined project management functions and problems in detail.

Domain Differentiation. The almost exclusive emphasis in the literature on linking agent functions has been on technical skills required for effective performance in the dissemination and utilization process. Yet when a person or team of persons enters into a complex process of interaction with other persons, either clients or resources, we cannot assume that technical skills alone provide the key to success. Whatever technical skills the person brings to the job or can acquire through training, those skills reflect only one rather limited aspect or domain of the person involved in the interaction process. In addition to particular technical skills, the person brings to

the process attitudes, values, sensitivities, and cognitive skills which may be well-established and not amenable to change through training.

Mick, et al. (1975, pp. 56-57) differentiated between training requirements for field agents and two types of selection criteria: (1) personality, attitude, and professionalism (e.g., have strong self-concept, high energy level, be a self-starter); (2) educational experience, knowledge, skills (e.g., have good listening skills, be knowledgeable about county, schools, school systems, and classroom problems). They also indicated methods of determining suitability according to selection criteria (pp. 78-79). For example, suitability for the self-starter and strong self-concept criteria would be evidence of prior employment in a position similar to a field agent and some indication in a face-to-face interview of a strong self-concept.

Crandall (1977, pp. 229-240) emphasized that half the battle may be won or lost in the selection of linking agents and briefly described the selection process employed by the NETWORK, and discussed five categories of prerequisite attributes for linkers: cognitive skills and abilities, general understandings and skills, intrapersonal competencies, work-related characteristics, and personal qualities. He also presented his estimate of the relative importance of the prerequisite attributes to the ten linking agent roles.

Examples of other sources which identify or list but do not describe or discuss non-technical skills are Culbertson (1977) and Capla Associates (1977). Culbertson (pp. 296-300) distinguished between the two broad areas of understandings and attitudes and categorized items in each area according to its relationship to one of the three general linking functions (improving education, boundary spanning, using knowledge-based products and services). Capla Associates (pp. 3-4) discriminated between cognitive skills and personal

qualities identified from a literature search and interviews with State Facilitators and Developer/Demonstrators. Examples of the variety of categories used and items included are summarized in Tables 3 and 4 under the broad headings of cognitive skills and personal qualities (see following pages).

Summary. This report has identified and briefly described thirteen clusters of functions that are encountered in various sources that describe educational linking agents. Functions are considered here as aggregations or clusters of related activities, skills, behaviors, or tasks. Although the current set of functional categories seems sufficient to encompass the current scope of educational linking agent activities, we doubt that they may be sufficient in the future and especially if more concrete and specific descriptions of functions are needed. Twelve factors which may influence further differentiation of functions were summarized. No attempt has been made to identify an exhaustive or definitive list of functions or influencing factors. Neither have those identified been analyzed thoroughly for implications and variables each may contain. Rather, the intent has been to present an inventory of existing possibilities and to summarize available information as a point of departure for more systematic and thorough examination of each factor.

TABLE 3

COGNITIVE SKILLS OF LINKING AGENTS

Culbertson, J.A. "A Nationwide Training System for Linking Agents in Education," 1977, pp. 298-300.	Capla Associates, TAB contractor for NDN. National Diffusion Network Skills Taxonomy, 1977, pp. 3-4.	Crandall, D.P. "Training and Supporting Linking Agents," 1977, pp. 229-239.
UNDERSTANDINGS AND ATTITUDES	COGNITIVE SKILLS AND PERSONAL QUALITIES	PREREQUISITE ATTRIBUTES
UNDERSTANDINGS Improving Education • Models of change • Strategies of change • Barriers to change • Processes of change • Effects of change • Types and attributes of innovations • Levels or stages in innovation implementation • Educational and organizational goal-setting • Planning for change • Organizational development and health Boundary Spanning • The nature of complex organizations • Organizational dependency and inter-dependency • Organization-environment relationships • Inter-organization communication • Types and attributes of relevant agencies • Organizational contact and entry • Problems of boundary-spanning • Tactics of boundary-spanning Knowledge Use • Information science concepts • Sources of knowledge and its uses • Quality control and related professional issues • Origin and development of federal and state dissemination systems in education • Ongoing and emerging state and federal improvement programs • Inventories of human and information resources	From SF and D/D interviews: • Understanding the process of change • Being familiar with educational resources • Understanding educational priorities From literature search: • History of dissemination and educational program improvement • Federal and state programs concerned with the topic • Literature on planned change, behavioral science, and curriculum theory • Access to sources of programs, products, and information • Educational and organizational goal-setting • Organizational development and health • Tactics of boundary-spanning • Information science concepts • Evaluation • Major issues in education	Cognitive Habits and Abilities • Abstracts and conceptualizes the basic elements of a problem • Responds constructively to new information • Provides original ideas and fresh perspectives • Brings theory to bear on problems occurring in action settings • Resists premature closure but proceeds toward closure when appropriate General Understandings and Skills • A sense of history about the field of dissemination and educational program improvement • Knowledge of past, current, and emerging federal and state programs concerned with these topics • Knowledge of the literature on planned change, behavioral science, and curriculum theory • Knowledge of and access to sources of programs, products, and information • Understanding of the quality control issues, ethical issues, and value issues inherent in such work • Understanding the many facets of an innovation as perceived by potential clients • Awareness of oneself as an innovation • Developing and using a systematic view of the client system • Developing and refining a knowledge of organizational dynamics, especially those peculiar to schools • Developing an understanding of and skills in managing the "mutual adaptation" process • Developing skills in diagnosing various aspects of organizations • Developing means of assessing and promoting the growth of clients with whom they work • Fostering the development of a collaborative climate within which to work and be housed • Employing data collection and feedback procedures to guide an effort and to elevate the level of discourse • Developing a consciousness as to the presence and relevance of various personal and interpersonal attributes of oneself and others • Developing mechanisms for clarifying, negotiating, and renegotiating one's own role(s) • Securing and refining a range of technical skills appropriate to one's role • Developing and effectively using a range of formal and informal support mechanisms • STAYING ALIVE!

TABLE 4

PERSONAL QUALITIES OF LINKING AGENTS

Culbertson, J.A. "A Nationwide Training System for Linking Agents in Education," 1977, pp. 298-300.	Capla Associates, TAB contractor for NDN. National Diffusion Network Skills Taxonomy, 1977, pp. 3-4.	Crandall, D.P. "Training and Supporting Linking Agents," 1977, pp. 229-239.
UNDERSTANDINGS AND ATTITUDES	COGNITIVE SKILLS AND PERSONAL QUALITIES	PREREQUISITE ATTRIBUTES
ATTITUDES Improving Education • Commitment to educational improvement • Favorable self-concept and low ego needs • Tolerance for ambiguity • Positive views toward risk • Acceptance of complexity • Flexible orientation to problem-solving Boundary Spanning • Openness to ideas • Tolerance for diversity • Acceptance of uncertainty • Positive perspectives on conflict • Commitment to a search for alternatives Knowledge Use • Commitment to knowledge utilization as a means for improving education • Appreciation for diverse ideas and perspectives • Motivation to acquire new ideas and products • Positive views about applying theory to practice • Positive views both of producers and users of knowledge	From SF and D/D interviews: • Being candid and straightforward • Having a tolerance for ambiguity • Ability to cope with frustrations • Being concerned and supportive • Triggering enthusiasm without going overboard • Being tolerant of different viewpoints • Being flexible From literature search: • Appreciation for diverse ideas and perspectives • Motivation to acquire new ideas • Tolerance for ambiguity • Favorable self-concept and low ego needs • Positive view toward risk • Flexibility • Integrity • Independence • Sense of humor • Orderliness • Candid and straightforward	Intrapersonal Competencies • Proactivity • Maturity • Systematic reflectivity Work-Related Characteristics • Takes initiative • Can be depended upon to follow through • Is productive, can be described as having high output • Exhibits competence, accomplishes tasks effectively • Displays loyalty to the groups with which (s)he is associated and the organization for which (s)he works Personal Qualities • Expresses him/herself in an open, straightforward, and candid manner • Appears self-directed, autonomous • Conveys that his/her prior experience has been varied, meaningful, and useful and that from it (s)he has developed a sense of perspective • Displays a sense of and concern for justice • Exhibits integrity • Demonstrates a concern for his/her own growth • Triggers enthusiasm in and energizes others • Exhibits a sense of humor • Displays social behavior appropriate to the client system • Has low ego needs • Possesses high tolerance for frustration • Exhibits orderliness • Has the ability to enjoy new experiences • Can exploit multiple role relationships for achievement of tasks • Maintains professional aloofness from internal politics • Has the ability to assess and exploit situations for achievement of tasks

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Piele, P. Review and Analysis of the Role, Activities, and Training of Educational Linking Agents. Eugene, OR: ERIC Clearinghouse on Educational Management, University of Oregon, 1975 (ERIC ED 128 871).

Pool, B.J. and Hood, P.D. Assessment Instruments for Educational Linking Agent Training: A Preliminary Compendium. San Francisco, CA: Far West Laboratory for Educational Research and Development, 1978.

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APPENDIX

EXAMPLES OF FUNCTIONS, SKILLS, PROCESSES, AND ACTIVITIES FOUND IN THE LITERATURE

Butler, M. and Paisley, W. Factors Determining Roles and Functions of Educational Linking Agents with Implications for Training and Support Systems (Educational Knowledge Dissemination and Utilization Occasional Papers Series). San Francisco, CA: Far West Laboratory for Educational Research and Development, 1978.

FUNCTIONS

- Planning
- Managing Conflict
- Analyzing Problem
- Intervening
- Communicating
- Analyzing Information
- Collecting and Organizing Information
- Disseminating
- Monitoring Ideas
- Monitoring Products
- Marketing
- Implementing
- Producing
- Influencing
- Evaluating

Capla Associates, Technical Assistance Brokerage (TAB) contractor for the National Diffusion Network (NDN). National Diffusion Network Skills Taxonomy. Rochelle Park, NJ: Capla Associates, Inc., 1977.

SKILL CLUSTERS

- Communication/Interpersonal Relationships
- Public Relations and Marketing
- Organization/Planning
- Evaluation/Documentation
- Problem Solving/Diagnosis

- Resource Acquisition/Utilization
- Management/Implementation

Cole, B. "Linker Competency Skill Assessment." In Cole, B., Linkage Training for Regional Education Service Agencies. Portland, OR: Northwest Regional Educational Laboratory, 1977.

SKILLS

- Problem Solving
- Interpersonal Communication
- Group Process
- Interpersonal Influence

Crandall, D. "Training and Supporting Linking Agents." In Nash, N. and Culbertson, J. (eds.), Linking Processes in Educational Improvement. Columbus, OH: University Council for Educational Administration, 1977.

TECHNICAL SKILL CLUSTERS

- Problem Solving
- Communication
- Resource Utilization
- Planning
- Process Helping
- Implementation
- Content/Subject Matter
- Evaluation/Documentation
- Survival

Gasaway, C. and Erwin, C. Consulting/Linkage Knowledge and Skills Inventory, LEA Services Department, Illinois Office of Education, July 1977.

SKILL AREAS

- Communication
- Entry/Intervention
- Diagnostic
- Group Facilitating
- Problem Solving

- Influence/Power
- Design
- Resource Utilization
- Conflict Management/Utilization
- Evaluation

Hood, P.D. and Blackwell, L.R. An Assessment System for Competence-Based Education. San Francisco, CA: Far West Laboratory for Educational Research and Development, 1975.

SKILL CLUSTERS

- Collecting Information
- Analyzing
- Planning
- Producing
- Evaluating
- Communicating

Research for Better Schools, Inc. Linker Training Needs Assessment Interview Schedule. Philadelphia, PA: Research for Better Schools, Inc., 1977.

ACTIVITIES

- Problem Clarification
- Goal Setting
- Needs Assessment
- Data Analysis
- Determining Improvement Requirements
- Identifying Alternatives
- Selecting Means of Improvement
- Developing Means of Improvement
- Implementation
- Evaluation
- Communication
- Conflict Management
- Research
- Organizational Development

Rosenau, F.S. Priority Training Needs of Linking Agents. San Francisco, CA: Far West Laboratory for Educational Research and Development, 1977.

SKILL CLUSTERS

- Problem Analysis
- Information Collecting and Organizing
- Analyzing Information
- Planning
- Producing
- Evaluating
- Dissemination and Marketing
- Communicating
- Implementing

Lipham, J.M. "The Administrator's Role in Educational Linkage." In Nash, N. and Culbertson, J. (eds.), Linking Processes in Educational Improvement. Columbus, OH: University Council for Educational Administration, 1977.

PROCESSES

- Purposing
- Planning
- Organizing
- Training
- Implementing
- Evaluating

Lieberman, A. "Linking Processes in Educational Change." In Nash, N. and Culbertson, J. (eds.), Linking Processes in Educational Improvement. Columbus, OH: University Council for Educational Administration, 1977.

PROCESSES

- Problem Solving
- Diagnosis
- Strategy Building
- Organization for Linkage

Culbertson, J.A. "A Nationwide Training System for Linking Agents." In Nash, N. and Culbertson, J. (eds.), Linking Processes in Educational Improvement. Columbus, OH: University Council for Educational Administration, 1977.

GENERAL FUNCTIONS

- Improving the ends and/or means of education
- Spanning organization boundaries
- Acquiring and using ideas, expert services, research findings, descriptions of practice, and other knowledge-based products and services in improvement activities